



# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)

Applicant's or agent's file reference Case 21405		<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/10293		International filing date (day/month/year) 16.09.2003	Priority date (day/month/year) 27.09.2002
International Patent Classification (IPC) or both national classification and IPC C12P23/00			
Applicant DSM IP ASSETS B.V. et al.			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the opinion</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>			
Date of submission of the demand  09.03.2004		Date of completion of this report  20.01.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer  Wiame, I  Telephone No. +31 70 340-8956 	

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/EP 03/10293**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-17 as originally filed

**Claims, Numbers**

1-10 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY  
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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	2,9-10
	No: Claims	1,3-8
Inventive step (IS)	Yes: Claims	
	No: Claims	2,9-10
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Reference is made to the following documents:

D1: US-A-6015684 (JOLLY SETSUKO OMATA ET AL) 18 January 2000

D2: Journal of Industrial Microbiology And Biotechnology, July 1999, 23(1), 677-681

- 1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1 and 3 to 8 is not new in the sense of Article 33(2) PCT.

The document D1 discloses (the references in parentheses applying to this document):

a fermentation method of astaxanthin using *Phaffia rhodozyma* comprising the steps of:

(a) in the growing phase, feeding of a nutrient medium containing glucose or sucrose based on the specific growth rate of *Phaffia rhodozyma* cells (col. 7, lines 30 to 41), and

(b) in the astaxanthin production phase, feeding of the nutrient medium based on the astaxanthin production rate (col. 7, lines 42 to 67),

while keeping the glucose concentration in the fermentation broth almost 0 g/L during the whole fermentation period (col. 7, lines 34 to 36, col. 11, lines 32 to 34),

wherein the pH control reagent is NH<sub>4</sub>OH solution (col. 11, lines 27 to 29),

wherein the fermentation is carried out at a pH of 5.5 (col. 11, lines 27 to 29),

wherein the fermentation is carried out at a temperature in the range from 15 to 24°C (col. 6, lines 23 to 24),

wherein the fermentation is carried out at DO between 20 and 90% (col. 11, lines 34 to 36),

wherein the nutrient medium contains as energy source corn syrup (col. 12, lines 14 to 16) and as nitrogen source yeast extract (col. 11, line 58), and

wherein the concentration of D-glucose or sucrose in the nutrient medium is 500 g/L (col. 11, lines 30 to 32).

The subject-matter of claims 1 and 3 to 8 is therefore not new (Article 33(2) PCT).

2 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 2, 9 and 10 does not involve an inventive step in the sense of Article 33(3) PCT.

2.1 Dependent claims 2, 9 and 10 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step (Article 33(3) PCT), the reasons being as follows:

The values of the parameters of claims 2 and 9 are values generally used in the technical field.

The strain *ATCC96594* of claim 10 is merely one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill. This strain is one of several *P. rhodozyma* strains present in culture collections (see for example table 1 of document D2).

3 Further remarks

3.1 The terms *based on the specific growth rate*, *based on the astaxanthin production rate* and *almost*, used in claim 1, are vague and prevent the invention from being unambiguously distinguished from the prior art, thereby rendering the definition of the subject-matter of said claim unclear (Article 6 PCT).

3.2 The parameter of *gassing rate* of claim 9 has been omitted from the description. It should therefore be added to the description to provide support for the claim as required by Article 6 PCT.